

REMARKS

The application has been amended and is believed to be in condition for allowance.

Amendments to the Disclosure

Independent claims 12 and 13 are amended to sharpen the claim language reciting the electron energy.

Further, claims 12, 13 and 20 are amended with formal revisions in consideration of U.S. practice and preferences

The foregoing amendments are non-substantive, and are not believed to impact the scope of the claims. No new matter is introduced by way of the amendments to the claims.

Formal Matters - Information Disclosure Statement

The Official Action states that the Information Disclosure Statement filed June 2, 2006 (the "IDS") fails to comply with 37 CFR 1.98(a)(2) requiring a legible copy of each cited foreign patent document and other publication. In particular, the Official Action states that no copy of any of the seven documents listed in the IDS under "Foreign Patent Documents" and "Other Documents" has been provided.

In reply, it is respectfully submitted that the present application is a National Phase of a PCT application, and that the documents listed on the PTO-1449 submitted with the IDS were cited in the International Search Report accompanying the present application. Accordingly, pursuant to the trilateral agreement between the USPTO, EPO and JPO, copies of the documents should

have been forwarded from the International Search Authority and made available in the national stage file. It is therefore respectfully submitted that the filing of the IDS was proper.

In addition, Applicant includes new copies of each document listed in the PTO-1449 submitted with the IDS in the Appendix to this amendment, for the Examiner's convenience.

Accordingly, consideration of the references listed in the IDS is respectfully solicited.

Provisional Double Patenting

The Official Action provisionally rejected claims 12, 18, 20 and 21 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-5 and 10 of co-pending Application No. 11/659,201 (US Pub. 2009/0022648) in view of Ahn et al. (US 6,454,912; "AHN"), Keller (US Pub. 2004/0112543 "KELLER"), and Hama et al. (US 5,525,159; "HAMA").

In response, the provisional rejection is noted. However, since this rejection has been indicated as provisional, Applicant respectfully submits that no Terminal Disclaimer is required at this time. Should co-pending U.S. Application 11/659,201 go to allowance, for example, the matter of the provisional rejection with respect to the present application should be re-visited and a determination made at that time in consideration of any amendments made to the claims of the present and the co-pending applications.

Substantive Issues - Section 103

The Official Action rejected claims 12, 16, 18, and 22 under 35 USC 103(a) as being unpatentable over Gruen et al. (US 5,772,760; "GRUEN") in view of AHN, KELLER, and HAMA.

The Official Action rejected claims 13, 17, and 19 under 35 USC 103(a) as being unpatentable over GRUEN in view of AHN, KELLER, HAMA, and further in view of Dearnaley (US 5,393,572; "DEARNALEY").

The Official Action rejected claim 14 under 35 USC 103(a) as being unpatentable over GRUEN, AHN, KELLER, HAMA, and further in view of Delaunay et al. (US Pub. 2004/0011291; "DELAUNAY").

The Official Action rejected claim 15 under 35 USC 103(a) as being unpatentable over GRUEN, AHN, KELLER, HAMA, DEARNALEY, and further in view of DELAUNAY.

The Official Action rejected claims 20 and 21 under 35 USC 103(a) as being unpatentable over GRUEN, AHN, KELLER, HAMA, and further in view of Sano et al. (US 6,372,304; "SANO").

The rejections are respectfully traversed for at least the reasons that follow.

As to the independent claims 12 and 13, it is respectfully submitted that none of the cited references teach or suggest means for generating high electron temperature plasma configured to maintain an electron energy at 15 to 50 eV to

generate a positive monovalent ion M+ from a gas containing an atom M.

It is further respectfully submitted that the electron energy as recited is critical and showing unexpected results.

There has been a strong demand for developing an efficient method to generate positive ions from atom M in the industry. The Applicants have discovered that the best method to achieve this object is to generate plasma comprised of high temperature electrons with an electron temperature of 15 to 50 eV, and excite atom M using this plasma to generate positive ion M+ (see, e.g., paragraph [0012] and [0031], wherein nitrogen is used as the atom M). ECR plasma is a concrete example of the plasma comprised of high temperature electrons, and the inventors fabricated ECR plasma equipment and obtained data to show that positive ions of M were generated efficiently using this equipment.

Accordingly, it is respectfully submitted that the cited references, individually or in combination, fail to teach all the recitations of the independent claims 12 and 13, and therefore claims 12 and 13 are patentable.

It is further respectfully submitted that claims depending from claims 12 and 13 are patentable at least for depending from a patentable parent claim.

Reconsideration and allowance of the claims are respectfully requested.

From the foregoing, it will be apparent that Applicants have fully responded to the March 23, 2009 Official Action and that the claims as presented are patentable. In view of this, Applicants respectfully request reconsideration of the claims, as presented, and their early passage to issue.

In order to expedite the prosecution of this case, the Examiner is invited to telephone the attorney for Applicants at the number set forth below if the Examiner is of the opinion that further discussion of this case would be helpful.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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**APPENDIX:**

The Appendix includes the following item(s):

- Legible copies of the following documents indicated Information Disclosure Statement filed June 2, 2006:
1. JP 1-309957 A
  2. JP 6-290725 A
  3. JP 2002-60211 A
  4. JP 6-166509 A
  5. WO 2004/089822 A1
  6. HATAKEYAMA et al., "6. Fullerene Plusma no Seishitsu to Oyo," Journal of Plasma and Fusion Research, vol. 75, no. 8, pp. 927 to 933 (August 25, 1999)
  7. PIETZAK et al., "Properties of Endohedral N@C60, Carbon, 1998, vol. 36, no. 5, 6, pp. 613 to 615